

## REMARKS

### **I. INTRODUCTION**

Applicants respectfully request the Appeal be withdrawn. Claims 1-5 are pending in the current application. Claim 4 has been cancelled. Applicants respectfully request reconsideration of the claims in view of the remarks that follow.

### **II. CLAIM REJECTIONS**

#### **A. The 35 U.S.C. § 112(1) Written Description Rejection Must Be Withdrawn.**

The Examiner has rejected claims 1-3 and 5 under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement, with three alleged deficiencies: 1) the lack of preheating requirement of claims 1, 2 and 5; 2) the lack of copper limitation of claim 2; and 3) the two minute maximum time limitation of claim 3. The Examiner's basis and rationale for each of these three claim limitations is erroneous, such that the 35 U.S.C. § 112(1) written description rejection must be withdrawn.

##### **1. The Law of Written Description**

The predecessor to the Federal Circuit noted that, "A description as filed is presumed to be adequate, unless or until sufficient evidence or reasoning to the contrary has been presented by the examiner to rebut the presumption." *In re Marzocchi*, 439 F.2d 220, 224 (CCPA 1971)(Emphasis supplied). The Examiner, therefore, must have a reasonable basis to challenge the adequacy of the written description. *Id.* The Examiner has the initial burden of presenting by a preponderance of the evidence why a person skilled in the art would not recognize in Applicants' disclosure a description of the invention defined by the claims. *In re Wertheim*, 541 F.2d 257, 262 (CCPA 1976). In rejecting a claim, the Examiner must set forth express findings of fact regarding the above analysis which support the lack of written description conclusion. *Id.*

The inquiry into whether the description requirement of 35 U.S.C. § 112, first paragraph is met is a question of fact. *In re Wertheim*, 541, F.2d 257, 262, 191 USPQ 90, 96 (CCPA 1976). Whether the description is adequate to support a later claimed invention depends on whether the disclosure of the application originally filed reasonably conveys to the artisan that the inventor had possession at that time of the later claimed subject matter. Lack of literal support, in and of itself, is not sufficient to establish lack of adequate descriptive support. *In re Kaslow*, 707 F.2d

1366, 1373, 217 USPQ 1089, 1096 (Fed. Cir. 1983). The description requirement of the first paragraph of 35 U.S.C. § 112 may be satisfied if there is support in the original disclosure for the concept of what is later claimed. *In re Anderson*, 471 F.2d 1237, 1244, 176 USPQ 331, 336 (CCPA 1973).

2. Without Preheating

Claims 1, 2 and 5 each require the negative limitation that the method be conducted without preheating to within austenitic temperatures prior to the plunging step. The Examiner notes that the specification is silent with regard to this negative limitation, and therefore concludes that the limitation is not supported by the specification, citing MPEP § 2173.05(i). However, this MPEP section is inconsistent with the statute. Neither the MPEP nor case law can supersede the statute.

More particularly, 35 U.S.C. § 112 merely requires that

"The specification contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention."

The Examiner has presented no evidence that one skilled in the art cannot practice Applicant's invention based upon the written description. Therefore, the statutory requirement under 35 U.S.C. § 112(1) is satisfied.

The statute does not require a description of everything outside or excluded by the invention. For example, there is no description in Applicant's specification that the process be conducted in a vacuum or at increased pressures. Therefore, one skilled in the art would understand from the description that neither a vacuum or increased pressure is required for Applicant's inventive process.

As noted by the CCPA *In re Johnson*, 558 F.2d 1008 (CCPA 1977) (cited in MPEP § 2173.05(i), the specification describes the whole invention. There is no requirement to describe anything beyond the invention.

The Examiner asserts that preheating is conventional, and one of ordinary skill in the art would expect preheating of the product to be coated. However, if preheating was required in Applicant's invention, then 35 U.S.C. § 112(1) requires that preheating be described. If

preheating was a necessary step of Applicant's invention (which it is not), and Applicant added a positive claim limitation regarding such preheating, such a positive claim limitation would be rejected as constituting new matter, since preheating is not described in the specification. If preheating constitutes new matter due to silence in the specification as to any preheating step, then the lack of preheating is implicit from such silence.

The Examiner's own description of the prior art supports this conclusion that one skilled in the art would assume there is no preheating, since there is no description of preheating. In particular, on page 13 of the Answer, the Examiner describes her understanding of the primary reference Rallis to perform the application of aluminum coating without flux, since Rallis has no teaching of applying flux. Since the silence in Rallis regarding application of flux is sufficient for the Examiner to understand that the Rallis process is performed without flux, similarly, Applicant's silence as to preheating is sufficient for the conclusion that the process is performed without preheating. It is improper for the Examiner to assert that silence in the prior as to a limitation teaches the absence of the limitation, but then assert the contrary with respect to Applicant's specification and that silence of a limitation does not teach absence of the limitation.

In *Ex parte Parks*, 30 U.S.P.Q.2d 1234 (BPAI 1994, the Board concluded that silence in the specification did not preclude a negative limitation in the claims. As the Board ruled,

"The observation of a lack of literal support does not, in and of itself, establish a *prima facie* case for lack of adequate descriptive support under the first paragraph of 35 U.S.C. § 112." *Id.* at 1236.

In *Parks*, the claims were directed towards a method, with the negative limitation of "absence of a catalyst." The Board explained that the specification seemed to "cry out for a catalyst if one were used" but no mention is made of a catalyst in the specification. The Board therefore concluded that one having ordinary skill in the art would have recognized that the process was conducted without a catalyst. Similarly, in Applicant's specification, there is no discussion of preheating. Based upon the Examiner's description of the conventional prior art preheating processes, it seems that the specification would cry out for preheating if it was a step in Applicant's process. Absent any description on preheating, one skilled in the art would recognize that preheating is not required in Applicant's process, similar to *Parks*, wherein the Board of Appeals concluded that one skilled in the art would understand that the process did not require a catalyst in view of the silence in the specification regarding a catalyst.

Furthermore, referring to Applicant's published application, ¶ 4 notes that, "[t]he disadvantage of the closest analog is impossibility of aluminum melt applying on cast iron and steel products at the temperature lower than 715°C without using fluxes and the presence of intermetallic compounds of quite a big thickness (10-15 micrometers) making the coating brittle, which doesn't allow to deform the steel product with aluminum coating hereinafter." The Summary of the Invention then notes that the present invention, "solves the problem of decreasing the temperature of aluminum melt,...." Thus, the disclosure specifically states that it solves the problem in the art of applying aluminum melt at high temperatures by decreasing the temperature of the aluminum melt. Such resolution of the problem in the art therefore cannot occur by including a preheating step. Hence, the specification adequately supports this provision in claim 1, and meets the written description requirement of 35 U.S.C. § 112, first paragraph.

In this case, it is respectfully submitted that the Examiner has not met the initial burden of presenting evidence as to why a person skilled in the art would not recognize in Appellants' disclosure that its process is performed without preheating. Instead, the Examiner cited MPEP 2173.05(i) for its discussion that the mere absence of a positive recitation is not basis for an exclusion. The Examiner then notes that, "there is simply no discussion one way or the other as to preheating features." (6/12/08 Office Action, p. 3). It is simply not the case, however, that Appellants are simply silent as to this feature of the method. On the contrary, as noted above, Appellants specifically distinguish their invention on this basis.

For all of the above reasons, the 35 U.S.C. § 112(1) rejection relating to the preheating negative limitation must be withdrawn.

### 3. Without Copper

Claim 2 requires the negative limitation that the alloy coating excludes copper. For all of the reasons set forth above with respect to the negative limitation regarding "without preheating", the Examiner's rejection under 35 U.S.C. § 112(1) of the "without copper" limitation must be withdrawn.

Furthermore, the specification clearly and unambiguously describes the alloy as containing an aluminum base, and zinc, silicon, magnesium, and tin. Nowhere does the specification teach or suggest that other components should be added to the alloy.

Surely, Applicant could not add a claim limitation that the alloy includes copper, since such a limitation would constitute new matter. Conversely, if adding a positive copper limitation constitutes new matter, then the negative limitation of "without copper" cannot also constitute new matter. It is illogical to have a situation where the addition or deletion of copper would both be new matter. The Examiner has provided no evidence that one of ordinary skill in the art would read Applicant's specification, and then add copper to the alloy.

The Examiner's rationale is based upon "comprising" language, which allegedly indicates that the alloy can include other ingredients, beyond those specifically listed in the specification. See the Examiner's Answer, page 8. Using this rationale, Applicant would have to list everything that must be excluded from the alloy. Again, 35 U.S.C. § 112(1) does not require a description of everything outside the invention.

On page 9 of the Answer for the previously pending appeal of this Application, the Examiner asserts, without any evidentiary support, that one of ordinary skill in the art would expect inclusion of copper, since copper is used in the prior art. However, 35 U.S.C. § 112(1) does not require the Applicant to discuss or distinguish the prior art. Since the specification describes the whole invention (*In re Johnson*, 558 F.2d 1008 (CCPA 1977)), the absence of copper in the specification teaches one of ordinary skill in the art that copper was not intended to be included as an ingredient of the alloy.

The concept that Appellants' process does not involve introduction of copper into the melt is reasonably conveyed from the specification as originally filed. In this regard, Appellants specifically describe in the Summary of the Invention that their method of applying aluminum coatings on cast iron and steel products comprises, "plunging the product into the aluminum melt alloyed with zinc and silicon the solution of said problem is reached by jet-abrasive preparing of the product and the aluminum melt is alloyed with zinc, silicon, magnesium, tin..." (Para. 6). Further, all of the preferred embodiments of Appellants' described invention disclose only the use of these elements. Nowhere does the disclosure suggest or describe the use of other elements besides zinc, silicon, magnesium, and tin as alloys. Certainly, the disclosure does not suggest to persons skilled in the art that copper is a suitable alloy for use in the invention. For these reasons, the original disclosure supports the added claim language which states that the process

does not involve introduction of copper into the melt and meets the legal requirements of 35 U.S.C. § 112, first paragraph.

Therefore, this 35 U.S.C. § 112(1) rejection must be withdrawn.

4. For Two Minutes or Less

Claim 3 requires that the plunge be for two minutes or less. The Examiner asserts that this is not supported by the specification, since the specification has examples wherein the plunge time is 40-120 seconds. The Examiner acknowledges on page 24 of the Appeal Answer that Tables 1 and 2 support the plunge times for exposure to the melt, and that 120 seconds is the highest amount of time. Based upon Tables 1 and 2, it is fair to conclude that a person having ordinary skill in the art would understand that the preferred plunge time would not exceed 120 seconds. Tables 1 and 2 have columns showing a range of the melt temperature and plunge times. The first row of the Table 2 shows temperature of 350° C and a time of 120 seconds. The Examiner apparently is relying on the claimed temperature of 360°-380° C, which is 1.5% greater than the 350° temperature of Table 2. There is no evidence that a person skilled in the art would consider the small temperature variance to be critical, such that the claims are not supported by the specification. Thus, the limitation of claim 3 that the plunge be for two minutes or less is within the understanding of a person skilled in the art.

Therefore, this 35 U.S.C. § 112(1) rejection should be withdrawn.

**B. The 35 U.S.C. § 112(1) Enablement Rejection Must Be Withdrawn.**

The Examiner has rejected claims 1, 2, 3 and 5 as failing to comply with the enablement requirement of 35 U.S.C. § 112, particularly with regard to the limitations of the claims regarding a Mandrel test. In particular, the Examiner asserts that one of ordinary skill in the art would not be able to make or use the invention, since they allegedly do not know how to perform a Mandrel test. Claims 1-3 and 5 stand rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. This rejection should also be withdrawn.

1. The Law of Enablement

Enablement is a legal determination of whether a patent enables one skilled in the art to make and use the claimed invention. *Raytheon Co. v. Roper Corp.*, 724 F.2d 951, 960 (Fed. Cir. 1983), and is not precluded even if some experimentation is necessary, although the amount of

experimentation needed must not be unduly extensive. *Atlas Powder Co. v. E.I. Du Pont De Nemours & Co.*, 750 F.2d 1569, 1576 (Fed. Cir. 1984); *W.L. Gore & Associates v. Garlock, Inc.*, 721 F.2d 1540, 1556 (Fed. Cir. 1983). Nothing more than objective enablement is required, and therefore it is irrelevant whether this teaching is provided through broad terminology of illustrative examples. *In re Marzocchi*, 439 F.2d 220, 223 (CCPA 1971).

An analysis of whether the claims are supported by an enabling disclosure requires a determination of whether that disclosure contains sufficient information regarding the subject matter of the appealed claims as to enable one skilled in the pertinent art to make and use the claimed invention. In order to establish a prima facie case of lack of enablement, the Examiner has the initial burden to establish a reasonable basis to question the enablement provided for the claimed invention. *See In re Wright*, 999 F.2d 1557, 1561-62 (Fed. Cir. 1993).

The threshold step in resolving this issue is to determine whether the examiner has met his burden of proof by advancing acceptable reasoning inconsistent with enablement. "Factors to be considered by the examiner in determining whether a disclosure would require undue experimentation have been summarized in *Ex parte Forman*, 230 USPQ 546, 547 (Bd. Pat. App. & Int. 1986); *In re Wands*, 858 F.2d 731, 737 (Fed. Cir. 1988).

2. The Examiner has Failed to Prove that it Would Take an Undue Amount of Experimentation to Practice the Claimed Invention

Claims 1-3 and 5 were rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. In this regard, the Examiner states that there is insufficient description "of how the 'Mandrel test' works such that this test can be reproduced, understood or compared, and thus one of ordinary skill in the art would not be able to make and/or use the invention." (6/22/08 Action, p. 9).

In the response dated April 22, 2008, claims 1-5 were amended to specifically note that the Mandrel test employed uses a mandrel having a minimum diameter of 10 mm, as set forth on page 3 of the specification. A simple Google search on the Internet demonstrates that the Mandrel test is a commonly known test in the industry for, "the test for determining the flexibility and adhesion of surface coatings by bending coated metal panels around mandrels." The standard for enablement does not require Appellants to explicitly describe terms that are well known in the art, such as "Mandrel test." See e.g. MPEP Section 2164.04. Moreover, in order to

make a rejection, the initial burden is on the Examiner to establish a reasonable basis to question the enablement provided for the claimed invention. *In re Wright*, 999 F.2d 1557, 27 USPQ2d 1510, 1513 (Fed. Cir. 1993).

In this case, it is clear that "Mandrel test" is a term that is well known in the art. On this basis, it would certainly not require an undue amount of experimentation for a person skilled in the art to make and/or use of the Mandrel test set forth in the claims.

The Patent and Trademark Office Board of Appeals stated:

The test [for enablement] is not merely quantitative, since a considerable amount of experimentation is permissible, if it is merely routine, or if the specification in question provides a reasonable amount of guidance with respect to the direction in which the experimentation should proceed to enable the determination of how to practice a desired embodiment of the invention claimed.

*Ex parte Jackson*, 217 USPQ 804, 807 (1982).

Moreover, the Mandrel test is a well-known standardized test, ASTM D522. See Exhibit B. Furthermore, equipment is commercially available to perform a Mandrel test under ASTM D522, as seen in Exhibit C.

Since the Examiner's premise is erroneous regarding knowledge of Mandrel tests, this 35 U.S.C. § 112(1) enablement rejection is fatally defective and must be withdrawn. Also, upon reading Appellants' disclosure, and based upon the Mandrel test is widely known and widely used in the art, those of ordinary skill in the art would have been provided a reasonable amount of guidance to make and use the claimed invention. The Examiner's rejection of claims 1-3 and 5 for lack of enablement should therefore be withdrawn.

**C. The 35 U.S.C. § 112(2) Rejection is Improper and Must Be Withdrawn.**

The Examiner raises two indefiniteness issues. First, the Examiner asserts confusion as to what is to be preheated, the product or the alloy, and what austenitic temperature is referred to, that of the product, or of the alloy. However, since austenitic temperatures relate to iron or steel, and not to aluminum, it would be clear to a person having ordinary skill in the art that the limitation that the process be performed without preheating to the austenitic temperature refers to



the steel or cast iron product being coated, and not to the alloy melt. (See Exhibit A, which defines austenite as being a form of iron under certain conditions.)

Next, the Examiner asserts indefiniteness with regard to the Mandrel test, since the specification allegedly does not provide an adequate description of how the Mandrel test works, such that the test can be reproduced, understood, or compared. However, as discussed above, since the Mandrel test is a standard ASTM test, one skilled in the art would know how to do the Mandrel test.

Therefore, since austenitic temperatures and Mandrel tests are well-known in the art, the specification is not indefinite and this rejection must be withdrawn.

**D. Rejection Under 35 U.S.C. § 103(a), Obviousness over Rallis (U.S. Patent No. 4,655,852) in View of Japan '213 (Japan 50-005213) Must be Withdrawn**

Claims 1-2 and 5 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Rallis in view of Japan '213. This rejection should be withdrawn.

**1. The Law of Obviousness**

The U.S. Supreme Court recently held that rigid and mandatory application of the "teaching-suggestion-motivation," or TSM, test is incompatible with its precedents. *KSR Int'l Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1741 (2007). The Court did not, however, discard the TSM test completely; it noted that its precedents show that an invention "composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art." *Id.* See also *Ex parte Whalen*, Appeal No. 2007-4423, p. 15).

The Court held that the TSM test must be applied flexibly, and take into account a number of factors "in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed." *Id.* at 1740-41. Despite this flexibility, however, the Court stated that "it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the [prior art] elements in the way the claimed new invention does." *Id.* "To facilitate review, this analysis should be explicit." *Id.*

The obviousness rationale addressed in *KSR* was premised on combining elements known in the prior art. *Id.* at 1738-39. A parallel analysis applies, however, to a rejection premised on

the obviousness of modifying a known composition to change its properties. *Ex parte Whalen*, Appeal No. 2007-4423, p. 16).

The KSR Court noted that obviousness cannot be proven merely by showing that the elements of a claimed device were known in the prior art; it must be shown that those of ordinary skill in the art would have had some "apparent reason to combine the known elements in the fashion claimed." *Id.* at 1741.

In the same way, when the prior art teaches away from the claimed solution as presented here, obviousness cannot be proven merely by showing that a known composition could have been modified by routine experimentation or solely on the expectation of success; it must be shown that those of ordinary skill in the art would have had some apparent reason to modify the known composition in a way that would result in the claimed composition. *Ex parte Whalen*, Appeal No. 2007-4423, p. 16).

2. The Cited Prior Art Does Not Teach or Suggest Methods Having the Claimed Steps of the Present Invention, and Therefore Do Not Render the Claimed Invention Obvious

The Examiner admits that the primary reference, Rallis, does not teach the claimed bath temperature, the precise alloy composition, the Mandrel test, or the lack of preheating, as required by claims 1, 2 and 5. The Examiner relies upon the Japanese '213 reference for the alloy composition, however, the zinc component of the alloy in '213 is 2%-8%, whereas each of claims 1, 2 and 5 require that the zinc be 7.0%-10.0%. At best, the '213 patent zinc range is 20% short of Applicant's zinc quantity. This 20% difference is not insubstantial. Thus, Applicant's zinc is not encompassed by the zinc of the '213 patent. Applicant's zinc range does not fall with the zinc range of the '213 patent. Therefore, even if the Rallis alloy is modified in accordance with the Japanese '213 patent, the claimed zinc range is not satisfied. For this reason alone, the 35 U.S.C. § 103 rejection should be reversed.

The Examiner also asserts that the Rallis process would produce a coated product that would meet the claimed Mandrel test, because the modified Rallis alloy meets the claimed percentages for components. However, as discussed above, the claimed zinc range of 7-10 is not met by the Rallis alloy, even as modified. Therefore, the premise for the Examiner's unsupported conclusion that the coated Rallis product would meet the Mandrel test is defective.

The Examiner further asserts, without support, that it would be obvious to perform the Rallis coating method, in view of the Japanese '213 patent, without preheating, as required by claims 1, 2 and 5. The Examiner admits that Rallis teaches preheating. As the Federal Circuit has explained, "it is not obvious to modify a prior art device in a manner inconsistent with the prior art reference. *In re Gorden*, 733 F.2d 900, 902 (Fed. Cir. 1984). Thus, since Rallis teaches preheating, it is not obvious to modify Rallis to eliminate preheating.

Furthermore, the Examiner cites nothing from the Japanese '213 patent to suggest that preheating should be eliminated in Rallis.

The Examiner then submits on page 16 of the Appeal Answer, that it is obvious to eliminate an element that is not desired. This simply is not the test for obviousness. The Examiner cites *In re Karlson*, 136 U.S.P.Q. 184 (CCPA 1963), for the proposition that omission of an element and its function involves only routine skill in the art where the remaining elements perform the same functions. However, there is no suggestion that the Rallis coating process is the same with and without preheating. The Examiner's conclusion is an illusory, unsupported argument, apparently made in hindsight, in an effort to satisfy the limitations of claims 1, 2 and 5 that Applicant's process be performed without preheating.

The combination of Rallis and Japan '213 simply fails to teach or suggest the provisions of the claimed invention, as Rallis requires preheating prior to the plunging step to a temperature above 1341°F to within the austenitizing temperature range of the carbon or alloy steel. (Col. 2, lines 18-21). Such preheating is disallowed by all of the claims. Japan '213 fails to provide this missing teaching as it does not disclose any process, but only an aluminum alloy.

It is the Examiner's position that, "it would have been obvious to perform the coating method of Rallis in view of '213 without preheating" on the basis that, "it has been held that omission of an element and its function in a combination where the remaining elements perform the same functions as before involves only routine skill in the art," citing *In re Karlson*, 136 USPQ 184 in support. (6/22/08 Action, p. 17). While there is some support in the case law for the principle that omission of an element and its function involves only routine skill in the art, the court has also recognized that this is not a mechanical rule, and that the language in *Karlson* was not intended to short circuit the determination of obviousness mandated by 35 U.S.C. § 103 (*see In re Wright*, 343 F.2d 761, 769-70, 145 USPQ 182, 190 (CCPA 1965)). Further, Appellants direct the Examiner's attention to *In re Ochiai*, 71 F.3d 1565, 1570,

37 USPQ2d 1127, 1132 (Fed. Cir. 1995) and *In re Brouwer*, 77 F.3d 422, 425, 37 USPQ2d 1663, 1666 (Fed. Cir. 1996) wherein the Federal Circuit held that the claimed invention as a whole must be evaluated under the standards set down in *Graham v. John Deere Co.*, 383 U.S. 1, 17-18, 148 USPQ 459, 466 (1966) and its progeny, and that the use of *per se* rules is improper in applying the test for obviousness under 35 U.S.C. § 103 since such rules are inconsistent with the fact-specific analysis of claims and prior art mandated by Section 103.

Here, the Examiner has failed to meet the initial burden of proof for obviousness by failing to provide a reasonable suggestion for eliminating the preheating step of Rallis. In fact, Rallis teaches away from such elimination by virtue of its disclosure that said heat treatment is necessary in order to increase the yield strength of the steel article to a minimum of 60,000 psi. (Abstract). Thus, the Examiner has failed to provide a *prima facie* case of obviousness.

Therefore, for all of the above reasons, the 35 U.S.C. § 103 rejection of claims 1, 2 and 5 based upon Rallis and the Japanese '213 patent must be withdrawn.

**E. Rejection Under 35 U.S.C. § 103(a), Obviousness over Gierek et al. (U.S. Patent No. 4,070,210) in View of Rallis (U.S. Patent No. 4,655,852) and Japan '213 (Japan 50-005213) Must be Withdrawn**

Claims 1-3 and 5 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Gierek et al. in view of Rallis and Japan '213. (6/22/08 Action, p. 18). This rejection should also be withdrawn.

Gierek does not disclose alloying of an aluminum melt with zinc, silicon, magnesium and tin. Rather, Gierek discloses an aluminum alloy that can contain aluminum and a single alloying metal such as zinc, silicon, magnesium or tin. More particularly, Gierek is limited to a single alloying metal. There is no teaching or suggestion to modify the teachings of Gierek to alloy an aluminum melt with these four claimed metals. Further, it is again noted that Rallis in view of Japan '213 do not teach the preparation of aluminum alloy on cast iron and steel products without preheating prior the plunging step to a temperature within the austenitizing temperature range of the carbon or alloy steel. Gierek also teaches preheating within the austenitizing temperature range, with upper bounds 270°C higher than the upper temperature allowed by the present invention.

The Examiner argues that where claimed ranges overlap or lie inside ranges disclosed by the prior art, a prima facie case of obviousness exists. (6/22/08 Action, p. 19). Again, however, the law of obviousness does not support such an automatic rule. While optimization of a known result-effective variable in a given range is generally obvious, *In re Peterson*, 315 F.3d 1325, 1330 (Fed. Cir. 2003); *In re Aller*, 220 F.2d 454, 456 (CCPA 1955), it is only when it is reasonably expected that an improvement will arise in that range. See e.g. *Ex parte Atkinson*, Appeal 2007-3900 (December 18, 2007). Here, it is not clear what result the Examiner thinks would be "optimized" by substantially lowering the temperatures described by Gieriek to below austenitizing range to arrive at Appellants' claimed preheating temperature range. For this reason, the Examiner has not met the initial burden for establishing a prima facie case of obviousness.

With respect to the lack of copper in the claimed invention, the Examiner asserts that the statement in Japan '213 that a desirable aluminum alloy includes 0.5% copper is "a typographical error." (6/22/08 Action p. 25). The Examiner's reasoning is that p. 61, first column teaches 0-5% copper, which the Examiner argues means that no copper can be used in the alloy. Appellants would respectfully note that is more likely that 0-5% copper is more likely the typographical error, and is intended instead to read "0.5% copper." Thus, the Examiner's assertion that Japan '213 teaches an aluminum alloy without copper is in error, and the rejection should accordingly be reversed.

Furthermore, The Examiner admits on page 17 of the Appeal Answer that Gieriek does not teach jet abrasion, the precise temperature of the melt bath, the precise amounts of the alloy components, and the Mandrel test features, all as required in claims 1-3 and 5. The Examiner cites the Rallis patent as teaching the jet abrasion, and the Japanese '213 patent is teaching the alloy component amounts, in accordance with the claims. However, as discussed above with respect to the other 35 U.S.C. § 103 rejection, the Japanese '213 patent does not have zinc in the range of 7%-10% as in the claims, but rather only has zinc in the range of 2%-8%. Thus, Applicant's claims distinguish over the cited references, even if combined.

Furthermore, as discussed above with respect to the first 35 U.S.C. § 103 rejection, none of the references teach or suggest the claimed Mandrel test result for the coated product. The Examiner again asserts a conclusion that the Mandrel test will be satisfied because the alloy

components are in the range of the claims. However, since the zinc is not within the claimed range, the premise for the Examiner's conclusion regarding the Mandrel test is faulty, such that the conclusion is fatally defective.

Therefore, for the above reasons, the 35 U.S.C. § 103 rejection based upon Gierek, Rallis, and the Japanese '213 patent must be withdrawn.

### III. CONCLUSION

This amendment accompanies the filing of a Request for Continued Examination (RCE). Please charge Deposit Account No. 26-0084 the amount of \$405.00 (small) for the RCE per the attached transmittal. No other fees or extensions of time are believed to be due in connection with this amendment; however, consider this a request for any extension inadvertently omitted, and charge any additional fees to Deposit Account No. 26-0084.

Reconsideration and allowance is respectfully requested.

Respectfully submitted,



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## austenite

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Main Entry: **aus-ten-ite** (n)  
Pronunciation: VOs-tə-nīt, 'is-  
Function: noun  
Etymology: French, from Sir W. C. Roberts-austen †1902 English metallurgist  
Date: 1901

: a solid solution in iron of carbon and sometimes other solutes that occurs as a constituent of steel under certain conditions

— **aus-ten-ite** (n) VOs-tə-nīt-ik, 'is-*adjective*

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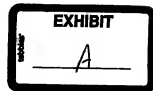
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## ASTM D522 - 93a(2008)

### ASTM D522 - 93a(2008) Standard Test Methods for Mandrel Bend Test of Attached Organic Coatings

Active Standard ASTM D522 Developed by Subcommittee: [D01.23](#) | [Book of Standards Volume: 06.01](#)

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## ASTM D522

### Significance and Use

Coatings attached to substrates are elongated when the substrates are bent during the manufacture of articles or when the articles are abused in service. These test methods have been useful in rating attached coatings for their ability to resist cracking when elongated. They have been useful in evaluating the flexibility of coatings on flexible substrates.

#### 1. Scope

1.1 These test methods cover the determination of the resistance to cracking (flexibility) of attached organic coatings on substrates of sheet metal or rubber-type materials.

1.2 The values stated in SI units are to be regarded as the standard. The values given in parentheses are for information only.

1.3 This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

#### 2. Referenced Documents

D1005 Test Method for Measurement of Dry-Film Thickness of Organic Coatings Using Micrometers

D1186 Test Methods for Nondestructive Measurement of Dry Film Thickness of Nonmagnetic Coatings Applied to a Ferrous Base

D1400 Test Method for Nondestructive Measurement of Dry Film Thickness of Nonconductive Coatings Applied to a Nonferrous Metal Base

D823 Practices for Producing Films of Uniform Thickness of Paint, Varnish, and Related Products on Test Panels





## Index Terms

cracking; flexibility; resistance—cracking; Cylindrical mandrel apparatus; Elongation—organic coatings; Film—paints/related coatings/materials; Flexibility; Latex paints; Mandrel test apparatus; Metallic coatings; Organic coatings; Panel evaluation; Rubber property analysis; Sheet metal; Solventborne paints/coatings; Substrates—coating applications; Bend testing—coatings; Conical mandrel apparatus; Cracking—coatings; ICS Number Code 25.220.60 (Organic coatings)

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